his usual health, and was not changed during his sickness. It had a full pulsation, followed by one or two slight short ones; as if the unequal pulsations were made by the left ventricle drawing on the pulmonary capillaries now full, now not so full, instead of being uniformly filled by the equal action of the ventricles on the aortic and pulmonary columns of blood.

For more than six months previous to his dissolution he had suffered excruciating pains along the dorsal vertebra, from which he only found relief by a repetition of blisters. From first to last he experienced no disturbance of the functions of the heart and lungs. At intervals of ease he attended to his usual duties about the asylum, and in going up and down flights of stairs he noticed no increased frequency of respiration or of the pulsations of the heart. This he observed himself was evidence that there could be no serious organic change in that organ. The only effect of its abnormal constitution was to diminish the force as indicated by the unequal contractions on the whole circulation to the extent of the defect in the right ventricle supported by the pericardium, somewhat contracted over the right side of the heart. This diminution of pressure on the circulation was not sufficient to cause any perceptible inconvenience from ordinary physical efforts, and the doctor's vocation and inclination did not induce him to exceed the bounds of moderation in muscular activity.

Some of the medical gentlemen assembled at the autopsy were erroneously impressed with the opinion that the condition of the heart and aorta, as above described, was caused by rheumatism. The doctor did not fall a victim to that disease. Periosteal rheumatism causes calcareous deposits, exostosis, and anchylosis, and is not an ulcerative inflammation, a very severe and dangerous malady when it attacks the vertebral periosteum. Nor does rheumatism cause atrophy, or, more especially, the opposite states of atrophy and hypertrophy. A diseased action could not unite such opposite results.

The above case strikingly illustrates the fact of a force of motion, generated in the capillary circulation reciprocal with the heart's action. How this force of motion is generated is not the object of the present communication.

DOMESTIC SUMMARY.

Amputation at the Hip-joint.—Two very interesting cases of this operation, both successful, are reported (*New York Med. Journal*, Dec. 1876) by Dr. ERSKINE MASON. The first of these was a healthy lad, aged eighteen, who had paralysis of the right lower extremity following scarlet fever. This became complicated subsequently by a faulty mode of walking, etc., with extreme talipes equino-valgus. For the past five years he has been enabled to place the limb with his hands in various abnormal positions, and desired his limb removed as it was an incumbrance. On examination after admittance into Roosevelt Hospital, it was observed that as the patient lies upon his back, the right thigh lies "upon its outer surface, and at right angles to the pelvis. In this position the head of the femur can be felt to be near the ramus of the pubis. The leg is at right angles to the thigh, and cannot be extended, owing to a subluxation of the tibia outward. There is a paralysis of the extensor muscles of the leg and thigh, though some of the flexors and gluteal muscles are called into action. This limb is greatly atrophied.

. . . "By circumduction of the thigh, the head of the femur can be made to change its position to a considerable extent. While at rest it seems to be just outside the ramus of the pubis. where it appears a new socket had been formed. No pain was elicited while examining the joint. The limb could be placed in almost every conceivable position."

Dr. Mason considered that any amputation short of exarticulation at the hip-joint would have been of little or no use to the patient, accordingly it was performed April 20 by Dr. M. "Esmarch's bandage was tightly applied to the limb as high up as the point of my incision (and allowed to remain on the limb during the operation), while an abdominal compressor was applied to the abdominal aorta, just above the umbilicus, by Dr. Peters, who most thoroughly supervised this part of the operation. The operation adopted was what is usually known as the circular method. The skin being divided with the large knife, it was drawn up by Dr. Markoe, and with a large scalpel I divided the various muscles to the ligaments, the soft parts being at the same time well retracted. As soon as the capsule was opened, Dr. Sands readily threw the bone from its socket. The anterior vessels were first ligated; the abdominal compressor was then removed, while the posterior vessels were controlled with pressure by sponges. The very small amount of blood lost was a surprise to all present. Thirteen vessels in all were ligated. It was estimated that not more than eight ounces of blood were lost during the whole operation, and half of this escaped from the limb through the femoral vein when this was severed. The fibrous capsule was then cut off close to the acetabulum, the inner half of the wound brought together with sutures, and the stump supported with straps. . . . The pulse at one time during the ligation of the vessels sank quite suddenly; a drachm and a half of brandy was at once given hypodermically, and two ounces per rectum, which quickly restored it. The head of the femur presented a spot of erosion, about the size of the little-finger nail, just below the insertion of the ligamentum teres, another upon the anterior surface of the head near the neck, while the posterior surface was flattened and slightly roughened, a fact which, under the circumstances, rendered the operation still more justifiable. The bone was found not to have been displaced from its normal socket, as previously supposed, but surrounded by a large and relaxed capsular ligament, which, with a long ligamentum teres, permitted the great freedom of motion. The right side of the pelvis was found atrophied and tilted downward, or retracted, presenting, indeed, that form of pelvis known in obstetrics as a high degree of the oblique oval pelvis. The acetabulum being very capacious, and approaching nearer the median line than usual, caused our error in diagnosis. It was this condition, with the elongated ligaments, which allowed us to throw the head of the bone very close if not quite into the perineum."

The patient left the hospital "in sound health and with a beautiful stump July 18."

The second case was a delicate-looking woman, aged thirty-five. "On admission there was found a tumour situated on the antero-lateral aspect of left thigh, two and a quarter inches below the antero-superior spinous process of the ileum, and extending from the median line backward to the great trochanter.

"The tumour was hard and immovable, and apparently connected with the bone; its margins not well defined; skin not adherent. There was no enlargement of inguinal or lumbar glands, and no growth detected in the pelvis. Rotation of the thigh caused considerable pain, and she was no longer able to stoop over far enough to tie her shoe, on account of the pain the attempt produced."

Upon consultation, it was deemed advisable to attempt the removal of the tumour, which Dr. Mason did March 28. "A straight incision was made, commencing three-quarters of an inch to the outer side of, and two inches below, the antero-superior spinous process of the ileum, and extending downward for the distance of five inches. From the middle of this incision another was made outward to the extent of three and a quarter inches. The tissues were then carefully divided till the surface of the tumour was reached, which presented a white, glistening appearance. The tumour was now seen to be situated directly below the capsule of the joint, and was evidently firmly attached to the bone. Around the margin of the growth there were several spiculæ of bony growth. After the tumour had been disconnected from the soft parts, an attempt was made to detach it from the bone, but on so doing the sac ruptured, discharging a bluish-white material of the consistency of, and resembling very much, boiled starch; what remained of the tumour was then removed, and the bone which formed the posterior wall of this growth, together with the surrounding spiculæ, was cut away with the chisel; indeed, the whole surface of the exposed bone was thoroughly scraped. Just as we were about to close the wound, it was noticed that in a depression of the bone there was exuding some of the same kind of starch-like material as was contained within the growth that had been removed. In the attempt to scoop out this material, the necessary turning of the instrument caused it to drop into the medullary cavity, so soft was the bone-tissue at this point. From this opening there exuded a soft, pulsating mass. It was the opinion at this time that amputation at the hip-joint was indicated, but, the consent of the patient not having been previously obtained, the wound was closed."

The upper portion of femur subsequently increased in size, patient suffered constantly with pain, and with the patient's consent amputation at the hip-joint was decided on and was performed by Dr. M. June 17. Patient under ether; Esmarch's bandage applied, together with abdominal compressor to aorta. "A circular incision was made with the amputating-knife through integument, the skin retracted, and the tissues divided down to the bone, then dissecting them up along the femur to the joint; after disarticulation, the femoral artery was ligated, after which the abdominal compressor was removed, and other bleeding points secured, fifteen ligatures being used in all; hemorrhage amounted to only *two ounces*; flaps brought together and held by five sutures, and drainage-tube inserted; patient showed but slight amount of shock during operation, her pulse being good throughout. 6 P.M. Patient recovered from ether, and removed to her ward; there appears to be very little pain and no shock; given opii gr. j, and repeated in three hours; pulse 120; temperature 98½°." The patient suffered a good deal subsequently from vomiting, but ultimately recovered by the 14th of September. Dr. Delafield, who examined the growth, reports it as a mixed tumour—sarcoma and chondroma.

Dr. M. offers some interesting observations in regard to this operation, from which we extract the following:—

"In this operation a great aim of the surgeon has always been to have the patient lose as little blood as possible, and the fact that blood has been so freely lost no doubt may have been a cause of death in some of the earlier cases. For this reason the tying the femoral just below Poupart's ligament, as a preliminary step, was in some instances resorted to. Now the fear of danger from this cause has been removed. With the assistance of the abdominal tourniquet, controlling the circulation through the abdominal aorta, and the use of Esmarch's elastic bandage, less blood need be lost than we see daily shed in some comparatively trivial operations.

"As far as we have been able to ascertain, these are the first two cases of amputation at the hip-joint where Esmarch's bandage was applied, and it accomplished the end for which it was used to a most eminent degree."

The tourniquet which Dr. M. used was May's modification of Signoroni's, and completely controlled the aorta. He found it to be not easily adjusted and should he operate again would give preference to Lister's.

"The use of this compressor," he observes, "is not without its dangers, as has been shown in some cases where it was used in the treatment of aneurism, and as we were only too forcibly reminded in our second case, from which, as a result, we had a very serious case of peritonitis, which threatened to rob us of our patient.

"We are aware that the aorta has in several cases been compressed for hours (Murray's case, five hours) by a tourniquet, and we have used it ourselves in a case of aneurism, and without any serious symptoms being manifested; and while in our first case not a symptom, even of soreness, was present, our experience in the second case was such that we feel it a duty to sound an alarm, and one which we believe should not go unheeded.

"The time that this instrument was in use, in our cases, we regret was not accurately noted, but compression was only kept up till the vessels in the anterior portion of the wound were tied. The time of the operation, in the first case, till the bone was disarticulated, I am told by three separate observers who timed me, was twenty-nine seconds, so the period of compression of the aorta may thus be proximately arrived at.

"With the second case the compressor was around the body longer: here considerable difficulty was experienced in arranging the instrument, and, while drawing the patient down a little further to the edge of the table, the instrument slipped, which again required its adjustment; and when I had nearly made my incision through the integument, the femoral was observed to pulsate, and the compressor had to be altered again." Dr. M.'s experience has convinced him "that compression by the tourniquet, in this operation, should not be prolonged beyond the time necessary to secure the anterior vessels, the posterior ones being comparatively small and readily controlled by pressure from sponges till severally secured."

Dr. Mason speaks favourably of the circular operation, from the ease of its performance and the beauty of the resultant stump. Another great feature in its favour is, he says, "the ease with which it is dressed and irrigated without disturbing the patient to such a degree as would be necessary in the flap-operation. Again, the vessels, not being so obliquely cut, are perhaps the more readily taken up; and by this method, also, there probably remains a smaller suppurating surface; and, finally, if during the operation it be discovered that the bone may with impunity be severed just below or at the tronchanters, it can readily be accomplished without any detriment to the patient; such would not be the case with the method by flaps. Hence this mode of operating, I think, strongly commends itself in cases of gunshot, railroad, or kindred injuries. While thus speaking so favourably of this operation I do not wish to be understood as saying that it should be resorted to in every case, under all circumstances, for I believe a surgeon should never be exclusively wedded to one method of operating. My experience, however, has been such as strongly predisposes me in its favour."

—

Lister's Antiseptic Method in Ovariotomy.—Dr. J. Marion Sims reports (*Medical Record*, Dec. 9, 1876) the following case in which he performed ovariotomy under the carbolic spray.

The patient, forty-seven years of age, noticed a tumour the size of an orange in the right iliac region last April. She consulted her family physician, who pronounced it an ovarian tumour. In June she consulted Dr. Thomas, who wisely told her the time had not arrived for an operation. On the 20th July she went to Philadelphia to see Dr. Atlee, who gave her the same good advice. I saw her on the 20th September. I have never seen any one so anxious for an operation. I dissuaded her from it, advising her to return home, and wait at least till next spring. I told her the tumour did not weigh more than ten pounds, and that an operation was not justifiable till she vomited her food, and began to emaciate. I saw her a month later. She declared she had not the strength to make the journey home, and that she threw up every time she took food. I still refused to operate. She wrote to Dr. Atlee, and he replied on the 6th November: "I can scarcely think a tumour so small can affect your general health so seriously. But if your emaciation and debility are the result of the presence of the tumour, then by all means it should be removed." I believe her vomiting and consequent emaciation were mainly the result of mental and moral causes. Whatever the cause, her declining stregth and a recent fugitive attack of peritonitis warned me not to procrastinate the operation any longer.

The operation was done on Thursday, the 23d November last. I am particular in fixing the date, because I believe it inaugurates a new departure in ovariotomy.

Dr. Sass directed the spray, which covered the seat of operation with a delicate carbolic mist. The hands, sponges, and instruments were all dipped in carbolic water. The operation and dressing lasted forty minutes, the spray being kept up all the time. It could have been continued two hours, if necessary. There were no adhesions. The peritoneal cavity contained six or eight ounces of a reddish serum. The peritoneal membrane was everywhere deeply congested. This fact explains the presence of reddish serum, and the previous attack of peritonitis.

The pedicle was very short, and at least three inches broad. It was tied in three sections with strong twine, and drawn out and fixed in the lower angle of the wound, clamp-fashion.

The external incision was closed by sutures, and a carbolized dressing applied.

The pulse never rose above 90, nor the temperature over 101.

Convalescence was fully assured in forty-eight hours, and the patient is now quite well. The tumour was polycystic, on right side, and weighed fifteen pounds.

I hasten to lay this case before the profession merely to urge the adoption of Lister's antiseptic method in ovariotomy, which, I am sure, will prove as valuable in this operation as it has in general surgery.

Dr. Sass's apparatus answered its purpose admirably, and I think he has rendered us a great service in bringing it before the profession at this time.

Dr. GRIFFITHS, of Swansea, exhibited (Nov. 21st) to the Pathological Society of London (*British Medical Journal*, Nov. 25, 1876), two dermoid ovarian tumours removed respectively from females aged twelve and twenty-one. They were both removed under the carbolic spray. In both cases the pedicle was ligatured with the carbolized catgut, and then returned into the pelvis, and both cases recovered without any untoward accident. See Quarterly Summary in this number of the Journal, page 274.

—

Cold Bathing in the Treatment of Summer Diarrhœal Affections of Infants.—In the last number of this journal attention was called to an article on this subject by Dr. Vocke, of Berlin. In 1875, Dr. CORNELIUS G. COMEGYS, Lecturer on Clinical Medicine at the Cincinnati Hospital, called attention to the same method of treatment of bowel affections of children in the summer season, where fever is present. In the *Medical Record* for July 29, 1876, Dr. Comegys says, "It has been so successful with me, that I am confident, if applied more generally, it would lessen very greatly the rates of mortality in the summer season. I allude to that form of disease which is denominated entero-colitis.

"Before we are called to these cases, tentative measures for the relief of the diarrhœa have already been applied by the friends, so that the inflammatory stage is generally fully developed when we first see the patient. The skin is hot (temperature 102½° to 105°), the pulse rapid (130 to 150), respiration 30 to 50, with frequent purging of semi-fluid, greenish, watery, fecal, and half digested matters; the mouth and tongue are dry; the thirst intense, but the water taken to slake it is quickly thrown off; the eyes are staring; pupils contracted; insomnia and rolling of the head, with utterance of distressing cries, due to headache from hyperæmia of cerebral vessels and unappeased thirst. Such is a general statement of symptoms.

"I at once proceed to give the little sufferer a bath in hydrant water, which with us, in summer, is about 75°. I have found it necessary to give this my personal attention at first, because the mother or friends will not carry out instructions, on account of the cries and resistance of the child; it seems to them a great cruelty.

"The contact of a hot skin with cold water is certainly painful for the moment, hence I immerse the body from legs upward gradually, sponging the skin in advance, so as to obtain tolerance.

"When the body and extremities are fully under, holding the head in the palm of my left hand, I pour over its surface cooler water, such as cistern water, which is here about 65°. This is kept up for ten or even fifteen minutes. Meanwhile the child ceases to cry or struggle, and is evidently greatly comforted; more especially when cool water is freely given to drink, the greedy swallowing of which shows how much of its distress is due to thirst.

"After the bath the patient should be wrapped unwiped, in a light woollen shawl, and laid upon its bed, with a slight additional covering. The pulse has lost frequency, but is quite feeble; the breathing is slower and the skin quite cool, even bluish in hue. The sedation may seem at first too great; but reaction soon begins, a healthy warmth and perspiration are established, and the child falls into a peaceful sleep. The scene has so changed that one will find no difficulty thenceforth in getting a bath given three or four times in twenty-four hours, if the alarming train of symptoms make show of revival; and they will revive to such an extent as to require exhibitions of the bath from time to time for two or three days perhaps; for the diseased state of the mucous membrane within has not been as suddenly relieved as the abnormal heat of the body.

"In the mean time internal remedies should be freely employed. Quinia, whiskey, beef-tea, milk and lime-water are the chief agents. One grain of quinia and a drachm of whiskey every three hours, for a child eight to sixteen months old, looks rather formidable, but they will be found admirable while the disposition to fever lasts.

"Subsequently bismuth and pepsin are of great value to restrain diarrhœa and to assist digestion, so greatly at fault owing to the blow which the mucous membrane has suffered."

Successful Treatment of Vascular Tumours by Injection with the Fluid Extract of Ergot.—Dr. Wm. A. Hammond relates (*Archives of Clin. Surg.*, October, 1876) three cases of this. He injected from half a drachm to two drachms at a time at intervals of ten days. In none of these cases was there at any time the least evidence of inflammatory action from the injections; he therefore attributes the successful results entirely to the action of the ergot on the organic fibres of the vessels.

Ergot in the Treatment of Purpura.—Dr. L. Duncan Bulkley, of New York, in an interesting paper (*The Practitioner*, Nov. 1876) states that—

I. The treatment of purpura, as advised in the books, is ineffective and tedious in lighter cases, and insufficient to save life in many of the severe or hemorrhagic cases.

II. Ergot possesses a very decided power in contracting the involuntary muscular fibres, causes divided arteries to contract, acts upon the smaller arteries and capillaries, and has been proved a valuable arrester of hemorrhage in many affections.

III. In purpura the action of ergot is very manifest, causing, when given in sufficient doses, an almost, if not quite, immediate cessation of the cutaneous and other hemorrhages.

IV. The most effective method of administration of ergot is by hypodermic injection, and this means renders it peculiarly valuable in purpura hemorrhagica where there is hæmatemesis, so that its administration by the mouth would be impossible, or in cases where the stomach would not tolerate it.

V. While ergotin, a purified watery extract, has been advised by many, and has been found to act efficiently in many cases, its action is liable to be uncertain by reason of age or faulty preparation, and after dilution with water it soon becomes inert.

VI. Fluid extract of ergot may be administered hypodermically, undiluted, and without local accident, as abscess or inflammation, if care be exercised; and its effect is very prompt and certain.

VII. Ergot may be thrown under the skin in any part of the body; the gluteal and shoulder regions answer well, but the places to be preferred are about the pectoral muscles or at the sides of the chest, about half way down.

VIII. Severe cases of purpura require the frequent repetition, even of very large doses, whether by the mouth or by hypodermic injections; both methods may be combined.

IX. Generally one or two grains of ergotin or from ten to fifteen minims of the fluid extract, hypodermically, once or twice a day are sufficient, but the former may safely be increased to five grains, and the latter to twenty or thirty minims, and repeated as often as every hour and a half.

X. Larger doses relatively are required when given by the mouth, and their action, thus given, is more slow.

XI. No fear need be entertained of any untoward effects; an ounce of fluid extract by the mouth, and seven grains of ergotin, hypodermically, have failed to give rise to any unpleasant symptoms; and from half a drachm to a drachm and a half of the tincture or fluid extract have been continued for several months without producing ergotism.

XII. Other preparations of ergot may be employed internally—as the powder, solid extract, wine, or infusion—the dose being proportioned to the effect required and produced.

—

Experimental Study of the Process of Repair.—Dr. I. N. **DANFORTH**, Lecturer on Pathology in Rush Medical College, has published an account (*Chicago Med. Journ. and Examiner*, Dec. 1876) of some interesting microscopic investigations made at brief intervals, of the same wound in a living tissue, from the time of its infiltration to its complete repair.

On the evening of February 23, 1876, a healthy, active, medium-sized frog was brought under the influence of curare, by the subcutaneous injection of about $\frac{1}{1000}$ of a grain. The animal was then placed upon a frog plate, the tongue gently drawn out and its edges pinned to a piece of perforated cork, which was fitted to the opening in the frog plate; the perforation in the cork being covered by a slip of glass, upon which, of course, the tongue rested. Especial care was taken not to put the tissue of the tongue so much upon the stretch as to materially interfere with the free circulation of the blood, or the action of the bloodvessels.

"A minute wound was now made through the tongue by means of a pair of sharp pointed scissors, lengthwise of the organ, or in the direction of the muscular fibres; care being taken to select an islet of tissue which was least vascular, and in which the few vessels were quite small. The frog was now placed upon the stage of the microscope, the changes of the next half hour closely watched, and a faithful camera drawing made by Dr. Piper; the first drawing being executed at 9 o'clock on the evening of February 23, or about one hour after the wound was made. The appearances at this time were as follows: the wound was rather more than one-sixteenth of an inch in length; its form was nearly oval, the edges having been drawn apart by the contraction of the muscular fibres. The bottom or floor of the wound was covered by a pretty firm blood clot; the blood having slowly oozed from the cut ends of the minute bloodvessels which occupied the track of the wound. In watching the escape of this blood from the vessels, I noticed this singular phenomenon, namely: that the escaped blood globules, or more properly the current of extra vascular blood, moved in compact and orderly columns across the floor of the wound; that is, after the vessels were cut and hemorrhage had ensued, the escaped blood did not flow in *all* directions in a helter skelter disorderly manner, but formed itself into different columns, representing the different vessels from which it flowed, and these several columns advanced in regular order, with but little variation in their course, until two streams chanced to encounter each other, when the larger and stronger stream would generally bear away the smaller and weaker one.

"In another hour all oozing of blood had ceased, coagula had formed in the wounded vessels up to the next collateral branch, and the condition of the wound and its immediate surroundings was that of apparent 'masterly inactivity.'

"Twelve hours after the injury the circulation was active in all parts of the tongue, except around the cut. In the immediate vicinity of the wound, the vessels are distended and gorged with blood, and stasis has occurred in the greater part of them. In some, however, the circulation is still wonderfully active and vigorous. The walls of the wound are mostly smooth and sharply defined, but from the (apparently) upper and lower border, a little bud, irregularly knotted, pale and terminating in a club-shaped extremity has commenced shooting out; the two buds (which are two masses of round cells) are almost opposite, and seem to be growing toward each other. 'I have an impression,' says the record which I made at the time, 'that they are incipient bloodvessels, and that I am about to witness the growth of new vessels.' The floor of the wound presents, 1st, a few minute coagula; 2d, blood globules, both white and red; and 3d, a few pale, very minute fibres of fibrine."

Thirty-six hours after injury. The little growing buds have undergone no further development, on the contrary they have grown smaller. "The minute fibres on the floor of the wound have increased, and are interwoven in all directions, and in their interstices are many blood globules of both varieties. The surrounding vessels are enlarged, and somewhat tortuous; in vessels which show any movement of blood at all, the circulation is very active. Small coagula are seen at intervals along the border of the wound. The tissues surrounding the injury are becoming slightly cloudy, unlike the sharpness and clearness of the more remote structures. On examining the tissues involved with No. 5 Hartnack, I can easily see that the cloudiness is due mainly to the migration of leucocytes, which are rapidly insinuating themselves into the areolar and muscular interstices."

Sixty hours after injury. "The wound is considerably smaller; the cloudy appearance of the surrounding tissues has increased; the border of the wound is now quite thickly fringed with little buds or protrusions, which, upon being examined with a quarter inch, are seen to be composed almost exclusively of cells. In some of these growing buds, a minute bloodvessel, with its tiny blood stream, can be made out. These vessels are always in the form of loops, a single minute current flowing into the cell bud through one branch of the loop, and immediately returning through the other. Here, then, we have a granulation growing up under our eyes, under conditions which admit of its being quite freely observed in a leisurely and satisfactory manner.

"The circulation in the vicinity of the wound is very active; the bloodvessels are dilated and tortuous; stasis is no longer present except in a few quite small vessels. The veins in the periphery of the microscopic field are enormously distended, and the blood stream is both very dark and very slow. In some of the vessels in sight, the jerky, interrupted movement of blood, so often described by authors as occurring in inflammation, can be very distinctly seen. Many blood globules are seen on the floor of the wound, but the network of fibres spoken of in yesterday's record has nearly disappeared."

Eighty-four hours after injury. "The area of the wound is no smaller than it was yesterday; in fact it seems a little larger. New vessels are multiplying around the wound, and new buds are pushing their way into the open space. The floor of the wound is now occupied by a thickly woven reticulated network of minute fibres of coagulated fibrine, which have formed since the last observation. The interstices are filled by blood globules, both red and white. The circulation is very active, and the frog seems in good health."

One hundred and eight hours after injury. "The size of the wound has very greatly diminished. New vessels are still forming, new granulations are springing up, and the size of the wound is rapidly diminishing."

One hundred and thirty-two hours after injury. Several new bloodvessels have appeared "and the pre-existing ones, especially the veins, are enormously dilated. The wound diminishes with great rapidity. The walls or 'banks' of the wound now present a very curious and interesting appearance. At short intervals, little semicircular rills of blood are seen running along the shelving and somewhat precipitous 'banks.' Each little semicircle, or loop, is covered in by a dense layer of small round cells; the deeper layers of cells assume a spindle form; thus new fibres are formed, and the wound is repaired."

One hundred and fifty-six hours after. "The cut is reduced to a minute oval slit, and the floor is quite covered with minute newly formed fibres, interwoven in all directions. Meantime, new granulations are continually forming along the side-walls or banks of the injured part, and thus the solution of tissue-continuity is being repaired."

One hundred and eighty hours after injury. The record states the wound is practically closed, and its original area is nicely mapped out by the presence of new cicatricial tissue.

Fourteen days after the infliction of the wound "the frog was again curarized, the cicatrix examined, and a careful drawing made. It was easy to trace the exact extent of the injury by the lighter colour of the new tissue. The cicatrix was entirely made up of new connective tissue; no regeneration of muscular tissue could be discovered. The new connective tissue appeared to be entirely the product of spindle-shaped cells, interwoven in all directions."

Among other points Dr. D. calls attention to the frequent changes in the condition of the blood-clot in the wounded part, and to the frequency of the escape of fresh masses of blood. At first free hemorrhage occurred, and the cavity of the wound was speedily filled with a coagulum. In a short time, the red globules had nearly disappeared, an intricate network of fine fibrinous fibres had formed, and in the interstices of this network, multitudes of mobile cells (*i. e.*, leucocytes) had accumulated. A few hours later, this clot had nearly disappeared, the fibres were wanting, except at the periphery of the wound, but a great number of leucocytes still remained and continued their wanderings over the floor of the wound. Several times while the tongue was under examination, the tenuous walls of the newly formed vessels would yield to the pressure of the blood stream. Hemorrhage would occur, a fresh clot would form, only to disappear after an interval of a few hours. Meantime new fibres were forming between the periphery of the clot (or successive clots), and the inner border of the wound, so that the area of the wound was constantly growing smaller.

The experimenter states that Dr. Piper, by a process invented by himself, has represented all these changes on magic lantern slides, "coloured so as to quite perfectly imitate nature in many instances, and enable us in all cases to differentiate the various tissues and structures by conventional colourings."

On the Effect of the Bipedal Position in Man.—Dr. HARRISON ALLEN made some remarks before the Academy of Natural Sciences of Philadelphia upon the physical characteristics of man, which result from the assumption of the bipedal position. He contrasted the position of a quadruped standing upon his hind legs, with that of a man in the erect attitude, such as that seen in the soldier standing at attention. The most conspicuous of these characteristics were seen in the absence of flexion at the knee-joint, the downward directed nostril, and the sigmoid curve of the supra-sacral vertebral column. The flattening of the sternum was a sequence upon the presence of the clavicle, and was, of course, not dependent upon the erect position. Yet, since a fixed clavicle (at least its mammalian expression) cannot act to advantage in any other than this position, the flattening can be assigned a secondary place in the group of characters.

Dependent upon the erect position—plus the flattening of the sternum—is the deflection of the heart to the left side. Dr. A. spoke at length upon the reasons of this deflection, and claimed for it a result of modification of the fœtal proportions of the heart. The typical mammalian act is the fœtal heart; the heart of the adult being a specialized form. The mechanism of the deflection is complicated. Entering into its consideration are (1) the fact that the right side of the heart is fixed by the cavæ at its right border, thus tending to tilt the right ventricle toward the left. (2) The greater weight of the posterior aspect of the heart, which throws the posterior wall downward and the anterior wall upward. (3) The fixation of the left side of the heart, by the pulmonary veins, directly in the median line, while the flattened sternum compels the apex to lie either to one or the other side of the median line. Dr. A., in conclusion, divided the characteristics of man into two groups. The first and most important being those the result of evolving from a quadrupedal type a bipedal specialized form; the second, being those belonging to the disposition of special organs, such as the teeth. Within this category may be placed the rudiments of structure, which are better developed in quadrupeds, and which often constitute the "varieties" of human anatomy.—*Proceedings Acad. Nat. Sci.*, December 7, 1875.